GUIDELINES

Prophylaxis against infective endocarditis: summary of NICE guidance

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This is one of a series of *BMJ* summaries of new guidelines, which are based on the best available evidence; they will highlight important recommendations for clinical practice, especially where uncertainty or controversy exists. Further information about the guidance, a list of members of the guideline development group, and the supporting evidence statements are in the version on bmj.com.

Why read this summary?

Infective endocarditis is a rare condition with a high mortality and morbidity. Accepted clinical practice has been to use antibiotic prophylaxis in those at risk of infective endocarditis who are having dental and certain non-dental interventional procedures, in the belief that this may prevent the development of infective endocarditis. The effectiveness of such antibiotic prophylaxis in humans is, however, not proved[1] and recent international guidelines recommend a much more limited role for antibiotic prophylaxis against infective endocarditis. This article summarises the most recent guidance from the National Institute for Health and Clinical Excellence (NICE) on antibiotic prophylaxis against infective endocarditis.[2]

Recommendations

NICE recommendations are based on systematic reviews of best available evidence. When minimal evidence is available recommendations are based on the guideline development group's opinion of what constitutes good practice. With a serious rare condition, such as infective endocarditis, research using experimental study designs is difficult and the evidence base consists of observational (predominantly case-control) studies. Evidence levels for the recommendations are in the longer version of this article on bmj.com.

Identifying cardiac risk factors

Regard patients with the following cardiac conditions as being at risk of developing infective endocarditis:

- Acquired valvular heart disease with stenosis or regurgitation
- Valve replacement
- Structural congenital heart disease (including surgically corrected or palliated structural conditions but excluding isolated atrial septal defect, fully repaired ventricular septal defect or fully repaired patent ductus arteriosus, and closure devices deemed to be endothelialised)
- Previous infective endocarditis
- Hypertrophic cardiomyopathy.

Patient advice

Offer patients at risk of infective endocarditis clear and consistent information about the prevention of infective endocarditis, including the following topics:

- Outline the benefits and risks of antibiotic prophylaxis, and include an explanation that antibiotic prophylaxis is no longer routinely recommended (as its clinical effectiveness is not proved, it is not cost effective, and, compared with no prophylaxis at all, it may lead to more deaths from anaphylaxis)
- Emphasise the importance of maintaining good oral health
- Outline the symptoms that may indicate a diagnosis of infective endocarditis and when to seek expert advice
- Explain the potential risks of having non-medical invasive procedures (such as body piercing or tattooing).

Prophylaxis for patients at risk of infective endocarditis

- Antibiotic prophylaxis against infective endocarditis is not recommended in the following circumstances:
  - For patients undergoing dental procedures
  - For people undergoing non-dental procedures at the following sites: upper and lower gastrointestinal tract; genitourinary tract (this includes urological, gynaecological, and obstetric procedures, and childbirth); upper and lower respiratory tract (this includes ear, nose, and throat procedures, and bronchoscopy).
- Chlorhexidine mouthwash should not be offered as prophylaxis against infective endocarditis to people at risk of infective endocarditis who are having dental procedures.
- Promptly investigate and appropriately treat any episodes of infection to reduce the risk of the patient subsequently developing endocarditis.
- If a person at risk of infective endocarditis is receiving antimicrobial therapy because they are having a gastrointestinal or genitourinary procedure at a site where there is suspected infection, the person should receive an antibiotic that covers organisms that cause infective endocarditis.

Overcoming barriers

This guideline represents an important change to accepted clinical practice in limiting the role of antibiotic prophylaxis for those at risk of infective endocarditis. The evidence shows that everyday activities such as regular tooth brushing almost certainly present a greater risk of infective endocarditis than a single dental procedure because they can cause repetitive bacteraemias with oral flora. Furthermore no consistent association has been shown between having an interventional procedure and the development of infective endocarditis. Effective implementation of this guideline will require the education and training of healthcare staff to ensure that consistent information is given by different professional groups. Patient information and education will be important. NICE has developed tools to help organisations implement the guideline.[2]

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1 Prendergast BD. The changing face of infective endocarditis. *Heart* 2006;92:879-85.
2 National Institute for Health and Clinical Excellence. *Prophylaxis against infective endocarditis*. 2008. (NICE clinical guideline No. 64) www.nice.org.uk/CG064

Commentary: Controversies in NICE guidance on infective endocarditis

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Infective endocarditis has always fascinated clinicians, but until 2006 it had rarely caused fisticuffs. In that year, the British Society for Antimicrobial Chemotherapy produced guidelines on the prevention of endocarditis,[1] which incensed the British Cardiac Society, apparently causing "dismay among cardiologists and confusion among patients and dentists."[2] The major change was the recommendation to restrict antibiotic prophylaxis to patients judged to be at highest risk. The British Cardiac Society countered by arranging for the National Institute for Health and Clinical Excellence (NICE) to review matters. As a result, NICE has published its own guidelines. Ironically, the draft version received scathing criticism via the British Cardiac Society's website (www.bcs.com/pages/news_full.asp?NewsID=18369177), and the definitive document seems destined to receive similar flak.

NICE no longer advocates antibiotic prophylaxis for the majority of patients in whom it would previously have been recommended, including those having dental, obstetric, gastrointestinal, and respiratory procedures. This is in clear conflict with long established clinical practice, according to which the devastating consequences of infective endocarditis demand that prophylaxis be given to everyone at any risk.

The full NICE guideline is virtually impenetrable. It is deeply impressive in bringing together evidence from disparate disciplines, but I doubt that any single individual in the UK health community is capable of understanding this vast horizon. I coped with *viridans* streptococci and Ebstein's anomaly, but if you also understand Markov subtrees as well as "ACERs" and Weibull functions, then I bow to your Leonardo-like learning, and this new NICE guidance should provide you with some new bedside reading.

The guidance is explicit on what is not recommended, but clarity about what is recommended and how health professionals should provide lacks "clear and consistent information" for patients. As all parties acknowledge, it will be hard to explain the shift in policy to patients, who have been reminded for years just how important their antibiotics were. A further substantive shortcoming is the lack of any detail about antibiotic choice or dosage. This will be a particular concern to non-specialists.

The recommendations are undoubtedly flawed in not providing positive indications of when to give antibiotics. However, they are clear and based on the most detailed available review of the admittedly imperfect evidence. Antibiotic prophylaxis has never been free nor risk-free, and these financial and health costs have tended to be ignored, not least by cardiologists. I'm swayed by the logic that the twice yearly visit to the dentist must be causing less trouble than twice daily tooth brushing. Antibiotic costs and serious reactions will be hugely reduced, as will the hassle to patients and clinicians. We may fail to prevent small numbers of cases of infective endocarditis, but prevention is in any case currently imperfect.

One final thought: it would be seemly for NICE to suggest that the NHS might adequately compensate anyone whose health suffered as a consequence of the new guidelines. That really would be power with responsibility.

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1 Gould FK, Elliott TSJ, Foweraker J, Fulford M, Perry JD, Roberts GJ, et al. Guidelines for the prevention of endocarditis: report of the Working Party of the British Society for Antimicrobial Chemotherapy. *J Antimicrob Chemother* 2006;57:1035-42. (http://jac.oxfordjournals.org/cgi/reprint/dkl121v1)
2 British Cardiac Society. *Endocarditis guidance*. 2006. www.bcs.com/pages/news_full.asp?NewsID=17423276